TRENTON FALLS HYDROELECTRIC STATION, DAM AND HEADWORKS
On west bank of West Canada Creek, along
Trenton Falls Road 2 miles north of
New York Route 28
Trenton
Oneida County
New York

HAER No. NY-155-B

HAER
NY
33-TREN
1B-

PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD
National Park Service
Northeast Region
U.S. Custom House
200 Chestnut Street
Philadelphia, PA 19106

HAER
NY
33-TREN
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HISTORIC AMERICAN ENGINEERING RECORD

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HAER No. NY-155-B

Location:	On west bank of West Canada Creek, along line of Trenton Falls Road 2 miles north of New York Route 28 Trenton Falls Oneida County New York USGS Quadrangle: Remsen, New York UTM Coordinates: 18.487580.4792290
Dates of Construction and Major Modifications:	1899-1901 (Dam, auxiliary spillway, first gatehouse) 1917-1921 (Second gatehouse, High Level Intake) 1922-1925 (Flashboards) 1931 (Gate valve motorization) 1951 (Floodgate) 1992-1993 (Dam repairs)
Contractors/Engineers: (1899-1901)	General Contractor, Utica Electric Light & Power Company; Project engineers, George A. Brackenridge (supervising engineer) and J.W. Jenkins (chief engineer); Dam and Foundations, T.A. Gillespie Company, New York, NY.
Contractors/Engineers: (1917-1921)	General Contractor, U.S. Structural Company, Dayton, OH; Project Engineers, Byron S. White (supervising engineer); Thomas E. Murray, George A. Orrok, Philip Torchio (consulting engineers); Manifold at Gatehouse, Chicago Bridge & Iron Works, Chicago, IL.
Contractors, 1931	Gate Hoists, Limitorque Corporation, Williamstown, MA
Present owner:	Niagara Mohawk Power Corporation 300 Erie Boulevard West Syracuse, NY 13202
Present use:	In operation; turbine-generator units 1-4 out of service

Significance: Strongly influenced by the earliest Niagara hydroelectric project, the 1901 Trenton Falls Station was installed in a spectacular gorge and was probably the highest-head contemporary plant in the eastern United States. A distinctly transitional station, Trenton Falls combined European-style turbines which soon proved outmoded with prescient, long-lived choices in electric generating and control equipment. The new powerhouse, added to the old one in 1919, reflected a generation of rapid development in hydroelectric station design and equipment. Dam and headworks modifications accompanied all major station changes, but the largely-original 56-foot-high dam and the auxiliary spillway evoke the regional magnitude of the station when first built.

Project Information: Trenton Falls Station is eligible for listing on the National Register of Historic Places. Niagara Mohawk Power Corporation proposed station modifications in the 1970s. As a result of project review by the Advisory Council on Historic Preservation, the New York State Historic Preservation Officer, and the Federal Energy Regulatory Commission (FERC), Niagara Mohawk will remove three of the four original turbine-generator units and stabilize powerhouse foundations. HAER documentation of the station, required by revised Article 35 of FERC license 2701 prior to such actions, was conducted from February to August 1993.

Project manager and historian:
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Part I - Historical Information*

A full discussion of the history and significance of the Trenton Falls Station appears in HAER No. NY-155. The station was built at the lower end of a spectacular gorge or chasm on West Canada Creek, a stream fed by a series of lakes in the southwestern Adirondacks about forty miles northeast of the gorge. Until the hydroelectric development of 1899-1901, the three-mile-long chasm was a series of eight falls which dropped about 330 feet between the villages of Prospect and Trenton Falls. The Prospect Falls were tha uppermost, with the others stretching over a 1.5-mile distance beginning at the present dam pond, which covers the 20-to-30-foot drop of the Rocky Heart and Cascades of the Alhambra falls. The last five falls drop 171 feet, past Village Falls below the present powerhouses. Trenton Chasm is 50-to-200 feet deep and very steep. The 30-to-200-foot wide bottom has broad sheets of rock, pocked with numerous potholes created by tumbling, whirling boulders once suspended in the cascading creek. Most of the chasm consists of Trenton limestone, a 300-foot-thick series of strata of varying thickness and hardness.[1]

The 56-foot-high concrete gravity dam, located about 650 feet above the Mill Dam Falls and largely designed by June 1899 for Utica Electric Light and Power Company, added 52 feet of head to the 214 feet between the foot of the Cascades of the Alhambra falls and the foot of Shermen Falls. In 1899, this was the highest-head hydroelectric project in the eastern United States, with nearly twice the head of the 1895 Niagara Station No. 1.[2] Although not especially large or unusual among contemporary dams, tha Trenton Falls dam was a critical component of station development, and reflects some anxiety among its designers about flood potential in the narrow gorge. Like many dams set within narrow bedrock valleys, this one has a convex-upstream arched plan to increase stability by transmitting water thrust to valley sides.[3] The dam's most unusual design feature is an auxiliary spillway cut into bedrock around the east abutment, intended to relieve high-water pressure on the dam. Designers may have also feared erosion of the limestone gorga walls at the dam abutments, or of the dam's concrete. The dam easily withstood such tests on its own, including a serious flood eight months after the station opened in April 1901, and the auxiliary spillway was soon regarded as somewhat superfluous.[4]

Construction at Trenton Falls began in September 1899 at the dam, and proceeded on a round-the-clock basis with a work force of up to 700 men. The dam, built by the T.A. Gillespie Company required some dynamiting for the main spillway and, especially, the auxiliary spillway where 30,000 cubic yards of rock were removed. Work at the dam took the lives of several men.[5] There were very few changes made at the dam and headworks until the construction of the second, or "new," powerhouse. Although planning for expansion began soon after old powerhouse completion, sufficient additional water supply was not assured until after the 1914 completion of the state-owned Hinckley Reservoir, upstream on West Canade Creek, for the Barge Canal. Increased electrical

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* Capitalized, undated references are to photographs in this documentation.

demand during World War I, even prior to formal American involvement, was a nationwide phenomenon which finally sparked the expansion of Trenton Falls Station. Utica Gas and Electric Company (UGEC), the immediate successor to the firm which built the old powerhouse, began the new powerhouse in 1917 and completed it in 1919, adding a new pipeline and additional headworks facilities. Water supply problems related to a lack of trashracks on some pipeline intakes at the dam delayed installation of one turbine-generator unit, until the 1921 construction of a new High Level Intake and installation of flashboard systems on the main and auxiliary spillways (see below and HAER No. NY-155).

In 1931, inspections at Trenton Falls revealed significant leakages from the pipeline and gate valves serving the old powerhouse, losses of head through the two intakes feeding the larger pipeline to the new powerhouse, and friction losses in the latter pipeline which analysis indicated could be overcome by opening four remaining unused intakes at the dam. After considering closing the old powerhouse or running both powerhouses from the larger pipeline, UGEC rebuilt the old pipeline and completed other improvements in 1931-32 which increased total station capacity to some 27,500 kw (a 5% increase) and upgraded safety and hydraulic control features. These improvement included installing new trash racks at intake pipes to add the four intakes to the 12-foot-diameter pipeline, and replacing belt-driven intake gate valve operators with individually-operated, motorized controls operable from the powerhouses and the gatehouses. Aside from a 1951-52 floodgate installed in the dam, there were no significant changes at the dam and headworks until replacement of two older pipelines with a single 14-foot-diameter in 1984. Recent repairs have altered the dam's surface appearance, but not its original design (see below and HAER No. NY-155).

The Trenton Falls Station today is most significant as a fascinating study in contrasts at the powerhouses between two very different generations of hydroelectrical engineering. The dam made these powerhouses possible, and remains a monument to the ambitions of entreprenaurs and engineers determined to exploit a high-head hydropower resource early in the history of large-scale hydroelectric development.

Part II - Descriptive Information

Summary of Site Arrangement and Existing Conditions

The dam and headworks is on West Canada Creek about 1.3 miles below Hinckley Reservoir, encompassing an area of about 2 acres in the towns of Trenton, Oneida County and Russia, Herkimer County. Trenton Falls Station as a whole covers about 40 acres along the creek (see HAER No. NY-155). Dam and headworks construction has altered landforms and stream flow in Trenton Falls Gorge. Original construction required bedrock excavation on the creek bottom for the dam, and considerable blasting for the auxiliary spillway. Tunnel projects associated with the High Level Intake involved additional excavation, and, along with vegetation clearance for access paths, has left an area of several acres open on the west side of the dam. Except during spring run-off, when water roars down the gorge, the dam and diversion of water for station use leaves the rock-bottomed canyon dry.

There are four major sets of components:

the dam, including eight original intake pipes at the west end, the original main spillway, and the 1951-52 floodgate;

the auxiliary rock spillway on the east bank, with a crest 1.7 feet below the main spillway, and the excavated rock channel around the east dam abutment;

the headworks structure with a surface 38 feet below the west section of the dam, including the two gatehouses, the control structure for the two waste or drain pipes, and the manifold for the 12-foot-diameter pipeline (see HAER NO. NY-155);

the High Level Intake northwest of the dam, from which two generations of tunnels fed, first, the 1917-19 12-foot-diameter pipeline, and now the 1984-85 14-foot-diameter pipeline.

A large gatekeeper's house stood west of the dam until 1941 (see HAER No. NY-155). A dirt road from the powerhouse reaches the dam and High Level Intake area. A short, steep path from the gorge top on the west side leads to the headworks; primary access to the headworks is via a set of metal stairs at the dam's west end. One must cross the dam to reach the auxiliery spillway.

Construction of the 14-foot-diameter pipeline replaced the 1921 High Level Intake with a new structure. The other components retain much of their original character and scale. The auxiliary spillway and the headworks structures remain little altered since the early 1930s, except that pipeline replacement in the 1980s left both older pipelines and the original High Level Intake pipe cut off and bulkheaded (see HAER No. NY-155). Dam rehabilitation in 1992-93 removed some original sluice gate controls, replaced original limestone coping and granite upstream facing with reinforced concrete, and surfaced both sides of the dam with the same material.

Dam

Main Sections and Floodgate

Built into bedrock on both sides and at bottom, the 290.5-foot-long concrete gravity dam crosses the creek with a curved plan defined by an 800-foot radius. The dam weighs about 30,000 tons. Except at spillway or floodgate sections, the dam rises about 56 feet above bedrock. The steep, straight upstream face has a 1:12 slope; curved slopes define the spillway and downstream faces. The dam base is 44 to 56 feet wide, with 8-foot-wide crests except at spillway areas. As first completed, there were three main sections,

> an 83-foot-long eastern section, with 18-inch-thick limestone capstones set on dowel pins, and a 14-foot-high section of granite blocks set into the uppermost upstream face;
>
> a 97-foot-long spillway, set 7 feet below the adjacent sections, with a 2-foot-thick curved limestone crest about 9 feet wide above about 6 feet of granite facing on the upstream side, and with 3-foot-thick, 4-to-7-foot-high granite wing walls;
>
> a 110.5-foot western or headgate section, similar in construction to the eastern section, with headgate and drain controls described below.[7]

An iron-pipe guard rail was installed around the dam top in 1915. When the first High Level Intake was installed in 1921, UGEC built the first flashboard system across the spillway to increase storage. The approximately 3-foot-high system consisted of a vertical array of 10-inch channel irons, set at 5.8-foot intervals in the spillway capstones, with 6-foot-long horizontal wooden panels hinged to the iron in, probably, two vertical units. The cam-operated flashboard sections overlapped, so that opening one section at one end of the spillway opened a complete horizontal array. Each array of horizontal sections could be opened individually, from top down. Rapidly-operated and flexible, the flashboard system allowed for quick response during high water conditions. Each section had to be closed individually, from a plank catwalk built over the flashboards. In 1922, the flashboards were raised to 6 feet and arranged in three vertical units. Corresponding arrangements outlined below were made at the auxiliary spillway. The flashboards were rebuilt with similar elevations and design in 1984 and 1992.[8]

In the early 1930s, a 22-foot-long concrete stairway was added to the west end of the dam, and in 1935 a steel safety cable was stretched over the main spillway. The western 18.5 feet of spillway was lowered 4 feet in 1951 for a 15-foot-wide steel roller floodgate and gate guide/platform structure. The floodgate was initially equipped with two hand-powered hoists, but was motorized in 1952; it was repaired in 1992. The latest work at the dam also included upgrading of a c1940 finger-drain system designed to remove moisture from the concrete, and insertion of 25-foot-long steel pins in the bedrock south of the spillway to preclude erosion.

Headgates and Drain Pipes

Original dam construction included eight 5-foot-diameter bell-and-spigot-connected, cast-iron pipes running through the dam in the western or headgate section. Numbered 1-8 west to east, intakes 1-4 were set 47 feet below the dam crest at 8.5- and 10-foot centers, and intakes 5-8 were set similarly 9 feet lower. These pipes run to the headworks described below. Initial designs called for using intakes 1 and 2 as headgates for the 7-foot-diameter pipeline, intakes 3 and 4 for a later pipeline which as built fed the new powerhouse, and intakes 5 through 8 as waste or drain pipes. These original plans changed c1917-18 to tap intakes 3 through 8 for the 12-foot-diameter pipeline (see HAER No. NY-155). Each intake had a 6.1-by-8.8-foot gate on the upstream dam face, hand-wheel operated by a single-stem, screw-and-threaded-rod lift mechanism gate with bronze guides. During original construction, trashracks were installed only on intakes 1 and 2. Expansion plans in 1917 included additional trashracks for intakes 3 and 4, but not for intakes 5 to 8. Although intakes 3 to 8 were connected to the 12-foot-diameter pipeline via a headworks manifold described in HAER No. NY-155, nos. 4-8 could not be used until provided with trashracks in 1931. The intakes and headgates remain largely intact, although following the 1983 removal of the 7- and 12-foot-diameter pipelines all gates except 7 and 8 were wedged shut with their hand wheels removed. Intakes 7 and 8, still operable as drains, were refurbished with new stems in 1992.[10]

Auxiliary Spillway

Blasted out of the gorge's Trenton limestone, the auxiliary or rock spillway channel is about 300 feet long and at least 69 feet wide, averaging 45 in height with a bottom elevation about 25 feet below the dam crest. The 159.5-foot-long concrete spillway structure is about 15 feet wide, with a stepped profile 5 to 7.5 feet high and a crest elevation 8.7 feet below that of the dam. The downstream, stepped face has twenty-four angled, 18-inch-thick concrete braces. Ten feet higher than the spillway, a 14.8-foot-long, 23-inch-thick concrete wall joins the east edge of the dam and the spillway's south edge. When first built, the spillway was equipped with a now-vanished system of 2-foot-high flashboards which, when installed each spring after the snowmelt runoff, brought the spillway crest to the level of the dam spillway. In 1921 and 1922, flashboard systems like those installed on the dam spillway were built, in each case 2 feet higher than those at the dam. A safety cable was installed over the flashboard catwalk in 1935, and the flashboard system was rebuilt in 1984 and 1992 along with similar work at the dam.[11]

Headworks and Gatehouses

There is conflicting data on the original headworks, but historic views and plans suggest they consisted of a 43-by-85-foot concrete platform, through which the eight intake pipes ran, and a 16.5-by-21.5-foot gatehouse over intakes 1 and 2. The pipes extended a total of about 55 feet from the upstream dam face to the south edge of the headworks. The western half of the platform, over pipes 1-4, was about 22 feet high; the eastern helf over pipes 5-8 was perhaps 6 feet lower. A 2-foot-thick concrete wall ran from the southeast edge of the gatehouse about 270 along the stream, to at least the railroad bridge, and evidently retained fill placed under the upper end of the 7-foot-diameter pipeline. The surviving 12-foot-high gatehouse has 22-inch-thick walls of granite block with interior brick lining, six 3.5-by-6-foot windows now boarded over, a 6-by-8.8-foot double wooden door, and a wood-framed, tin-covered, hipped wood roof. A small chimney, now removed, probebly served a stove or very small boiler to prevent gate valve freezing. Two 5-foot-diameter, steel Chapman gate valves controlled flows through intakes 1 and 2 to a Y-shaped connecting pipe to the 7-foot-diameter pipeline (see HAER No. NY-155). The non-rising, brass-stemmed valves were probably hand-operated when first installed. During new powerhouse construction, the gate valves were apparently modified with belt drives run off a single motorized line shaft, but retained their hand-powered operators.[12]

Initial new powerhouse plans in early 1917 included an extension of the original gatehouse to control intakes 3 and 4 and feed the 12-foot-diameter pipeline, and a high-level intake immediately east of the gatekeeper'e house.[13] By 1918, the high-level intake was evidently shelved in favor of a greatly expanded headworks which tapped pipes 3-8 to feed the new pipeline.[14] These pipes were extended 30 to 50 feet to meet a pipeline manifold in echelon, with Y-shaped connections allowing pipes 7 and 8 to serve also as drains (see HAER No. NY-155). Around this complex nest of connections, the headworks platform was extended at the original gatehouse elevation to an irregular area of ebout 85 by 110 feet. A new 15.5-by-76-foot, 12-foot-high, steel-framed concrete gatehouse, with 12-inch-thick walls and a tin-covered, hipped wood roof, was built over intakes 3-8, extending also across most of the old gatehouse's south elevation. A narrow passageway joins the two gatehouses, which were heated by a steam boiler in the new gatehouse. The 1918 gatehouse has six steel-framed, 38-by-56-inch windows, and two 4.2-by-7-foot steel doors. A wooden-slat section of floor surrounds the area occupied by operators for six 5-foot-diameter, non-rising, brass-stemmed, steel Chapman gete valves. The gate valves had hand operators as well as belt drives run off a single motorized line shaft.[15]

A 4-section steel stairway with wood steps and iron pipe railings was installed from the west edge of the dam to the headworks platform in 1920, replacing an undocumented earlier access. Niagara Mohawk replaced the stairway in 1992 with an all-metal structure.[16]

In addition to the two gatehouses, there was an 11-foot-high, 28-by-40-foot, trapezoidal room submerged in the 1918 headworks for gate valves controlling drain pipe connections on pipes 7 and 8. A small frame shed covered the ladder access to this room, which contained two 5-foot-diameter gate valves similar to the others, also belt-driven off a single motorized lina shaft.[17]

During the extensive 1931-32 hydraulic improvements made at Trenton Falls Station (see HAER No. NY-155), all eight gate valves in the two gatehouses were individually motorized with Westinghouse induction motors and Limitorque controls, and made operable from the powerhouses as well as the gatehouses. These controls were later largely enclosed by plywood covers. Electric heat was installed in each gatehouse in 1939. The waste pipe gate valves were evidently never individually motorized, but were upgraded in 1941 with a belt-speed reducer.[18]

High Level Intake

Following the 1919 completion of the enlarged headworks, 12-foot-diameter pipeline, and new powerhouse, Utica Gas and Electric evidently attempted to use all six intakes to feed the pipeline manifold.[19] The continued lack of trashracks on intakes 5-8 -- a by-product of operating the old powerhouse during new powerhouse construction -- probably confounded turbine operations quickly and inhibited installation of the third new powerhouse turbine-generator unit. The unprotected intakes were closed until trashracks were installed in 1931. Rather than close the powerhouses, UGEC supplemented the flow into the 12-foot-diameter pipeline in 1921 with a resurrected High Level Intake, which took water from the west side of the pond to the pipeline, around the gatekeeper's house. The intake included a 40-foot-long, 24-by-20-foot concrete-lined tunnel through bedrock, which ran into a 200-foot-long, 10-foot-diameter concrete tunnel, and a 100-foot-long 10-foot-diameter pipe of 3/8-inch-thick riveted boiler plate which joined the 12-foot-diameter pipeline below the headworks. The intake's upper tunnel edge on the pond was about 12 feet below the dam crest, and over a foot below the crest of the auxiliary spillway. A large trashrack guarded the High Level Intake, which was controlled from a 56-by-32-foot, steel-framed wood gatehouse by two motor-operated, 9-by-27-foot headgates set within concrete wells extending 50 to 60 feet below the surface. The gates were operable from the powerhouses as well as the gatehouse. Except for part of the pipe at its lower end, the entire High Level Intake structure was removed c1984 for installation of a new, larger intake for the 14-foot-diameter pipeline.[20]

Notes to Parts I and II

1. White 1918: 1028; White 1927: 3-5.

2. Thomas 1951: 144; White 1927: 8-10; cf. Hay 1991: Appendix C.

3. Wegmann 1911: 46; Barrows 1943: 331.

4. White 1927.

5. Thomas 1951: 144-8.

6. Personal communications, Robert Easterly and Robert Shantie.

7. *Electrical World* 1906: 1027; Thomas 1951: 145; Niagara Mohawk Power Corporation n.d.

8. White 1927: 13; Niagara Mohawk Power Corporation n.d.

9. Niagara Mohawk Power Corporation n.d.; personal communication, Robert Shantie.

10. *Electrical World* 1906; White 1918; Personal communication, Robert Shantie; Niagara Mohawk Power Corporation n.d., and 2-T7-H2: Brackenridge 1899a, 1899b, 1900c [plans].

11. White 1927: 3; Niagara Mohawk Power Corporation n.d., and 2-T7-H2: Utica Gas & Electric Co. 1922 [plans].; personal communication, Robert Shantie.

12. *Electrical World* 1906; Carr 1934; Niagara Mohawk Power Corporation n.d., and 2-T7-H0: Brackenridge 1901, 2-T7-H2: Brackenridge 1899b, 1899c, and 2

13. Niagara Mohawk Power Corporation, 2-T7-H4: Utica Gas & Electric Company 1917 [plans].

14. White 1918.

15. Ibid; Niagara Mohawk Power Corporation n.d., and 2-T7-H1-: Utica Gas & Electric Company [plans].

16. Niagara Mohawk Power Corporation n.d.; personal communication, Robert Shantie.

17. Niagara Mohawk Power Corporation n.d.

18. Niagara Mohawk Power Corporation n.d., and correspondence file 2-T7-H11.

19. Thomas 1951: 152.

20. Niagara Mohawk Power Corporation n.d., and 2-T7-H3: Clark 1922 [plans].

Part III - Sources of Information

Original Drawings

Niagara Mohawk Power Corporation has over 1600 historic or current plans and drawings, the great majority of them on microfilm, at its headquarters. Approximately 115 plans document the development of the dama nd headworks. These materials include many contractor or consulting engineer plans prepared for original construction of the dam, headworks, pipelines, powerhouses, and substation, with a number of plans showing proposed features or equipment not installed. The earliest drawings date from 1899. Most drawings are coded with a system introduced after many of them were originally prepared. The system is based on different site, electrical, hydraulic, and structural components. Drawings used for this documentation, with their codes, are listed below. Other drawings are listed for HAER Nos. NY-155-A and NY-155-B. For access, contact:

Environmental Quality Services
Niagara Mohawk Power Corporation
300 Erie Boulevard West
Syracuse, NY 13202
ATTN (1993): Scott D. Shupe, Environmental Analyst, tel. 315/428-6616

<u>No Codes or Illegible Codes</u>

Niagara Mohawk Power Corporation

1989a Constructed West Canada Creek Project. Trenton Developmant. Intake, Pipelines and Surge Tank. Profiles, Section and Elevation. License Amendment Exhibit F, Sheet 5A.

1989b Constructed West Canada Creek Project. Trenton Development. General Plan - Dam and Spillway. Plan, Elevations and Sections. License Amendment Exhibit F, Sheet 4B.

1989c Constructed West Canada Creek Project. Trenton Devalopment. Detail Map. License Amendment Exhibit G, Sheet 5A.

Utica Gas & Electric Company

1920 Trenton Falls Extension/Profile of 12'Dia. Pipe Line.

<u>2-T7-H0: General</u>

Brackinridge, W.A.

1901 Utica Electric Light and Power Company. Map showing location of Dam, Pipeline and Power House. No. R-106.

2-T7-H2: Dams & Appurtenances, Dikes

Brackinridge, W.A.

1899a Utica Electric Light and Power Company. Vertical Section of Dam showing Waste and Motor Pipes. No. A-6

1899b Utica Electric Light and Power Company. Horizontal Section of Dam showing Waste and Motor Pipes. No. R5.

1899c Utica Electric Light and Power Company. Map showing location of Dam. No. R12.

1900a Utica Electric Light and Electric Company. Cross Sections of Dam. No. A8.

1900b Utica Electric Light and Electric Company. Rear Elevation of Dam and cross-section of Spillway. Profile on centre line of Spillway. No. R70.

1900c Utica Electric Light and Power Company. Elevation of Dam showing Upstream Face [filmed in two parts]. No. R79.

1900d Utica Electric Light and Power Company. Cross Sections of Dam. No. 74-A.

Utica Gas & Electric Co.

1922 Proposed Flashboards for Rock Spillway. No. B-2939.

2-T7-H3: Intake (Sluice Gates)

Clark, J.K.

1922 Plan and Profile, High Level Intake, Trenton Falls N.Y. No. S-1021.

2-T7-H4: Pipe Line, Tunnels, & Canal

Murray, Thomas E./George A. Orrok

1919 Trenton Falls Extension. Proposed High Level Intake and Connecting Pipe. No. 5994[?].

Utica Gas & Electric Company

1917 Trenton Falls Station. Details of Upper Steel Pipe Line and Connections. No. 1574-A.

<u>2-T7-H10: Gatehouse - Structure</u>
Brackinridge, W. A.
1900 Utica Electric Light and Electric Company. Proposed Plan and Elevations for Gate House. No. A-119.

Utica Gas & Electric Company
1916 Trenton Falls Station. Elevations of Gate House. No. 1571-1.

c1922 [illegible title block. plans and sections of dam pipes & manifolds, gate valves & operators].

<u>2-T7-H13: Powerhouse - Superstructure</u>
Anonymous
c1942-5a Trenton Falls Dam Building Inspection/General Plan.

Historic Views

There are few available photographs before the 1917-19 construction of the new powerhouse. Some appear in *Electrical World* 1906. Niagara Mohawk Power Corporation has over 1000 historic views at its headquarters, in several collections, including a small number of pre-1917 views. Aside from published views in White 1918, dam and headwork modifications for new powerhouse construction photographs appear rare, but after c1919-20 the Niagara Mohawk collection provides a very full record of changes made at the station. For access, see Original Drawings, above.

Interviews

Many Niagara Mohawk Power Corporation employees provided valuable information during research for this documentation from March to May 1993. At the Syracuse headquarters, engineers, designers, and analysts included Paul Bernhardt, Robert Easterly, Joseph Flood, Samuel Hirschey, Jacob Niziol, Gary Schoonmaker, Robert Shantie, Scott Shupe, and Joseph Viau. Edward Cooney, Harbor Point control supervisor, and past or present Trenton Falls Station operators George DiStefanis, Robert Dolan, Robert Jones, and Wayne Richard shared years of personal station management experience.

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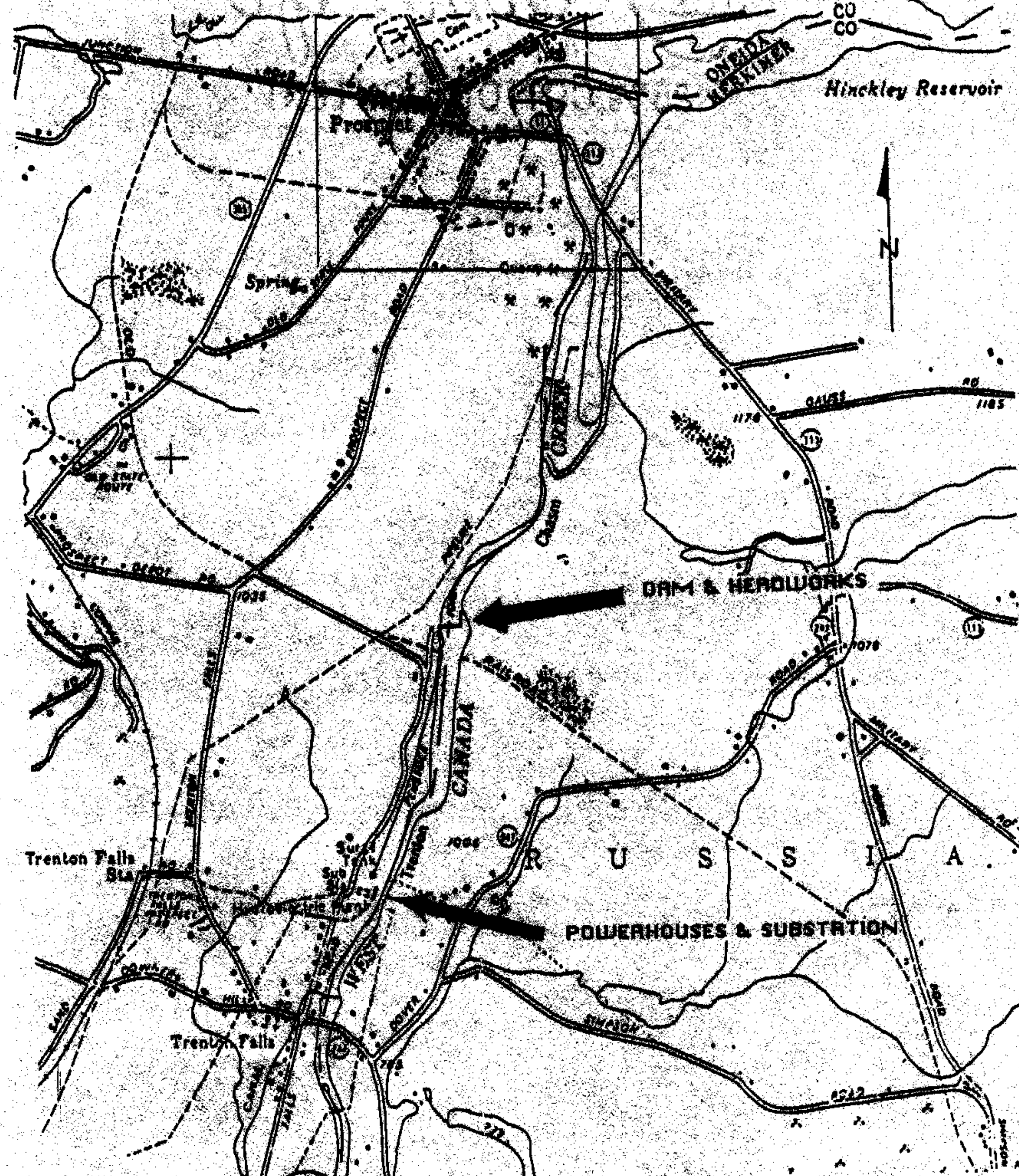
Sources Not Yet Investigated

More intensive use of available plans and historic views might reveal additional structural or station history details, presumably minor in nature. Further interviews with past and present station operators would yield useful information on equipment performance or hydraulic problems since at least c1945, as well as first-hand perspectives on operator staffing and organization patterns.



TRENTON FALLS HYDROELECTRIC STATION ON WEST CANADA CREEK
(base map: Remsen U.S. Geological Survey 7.5-Minute Quadrangle Sheet)